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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/045,287

10/18/2001

Michael Robins

23397.03200

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02/08/2006

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EXAMINER

WON, MICHAEL YOUNG

ART UNIT

PAPER NUMBER

2155

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/045,287

Applicant(s)

ROBINS ET AL.

Examiner

Michael Y. Won

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8,10-18,20-28 and 30-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8,10-18,20-28 and 30-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the amendment filed December 15, 2005.
2. Claims 1, 3, 7, 10, 11, 13, 17, 20, 21, 23, 27, 30, and 31-35 have been amended.
3. Claims 1-8, 10-18, 20-28, and 30-35 have been examined and are pending with this action.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 31 and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 31 and 32 state, "assigning a credit... in a round robin sequential fashion". The reference locations provided by the applicant(s) do not explicitly teach a round robin sequential fashion.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim. The language "substantially" of "assigned credits substantially equal to", renders the claim as being indefinite.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-8, 11-18, and 21-28 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Bonomi et al. (US 6,396,834 B1).

**INDEPENDENT:**

As per **claim 1**, Bonomi teaches a method of performing virtual network connection merge, the method comprising:

assembling at least one data unit from data traffic of ready network connection in a plurality of connections (see Fig.3; col.11, lines 20-32 & 41-44; and col.12, lines 19-20);

assigning a relative frequency value to each network connection, wherein a higher relative frequency value is assigned to a network connection requiring a higher relative bandwidth (see col.2, lines 34-44; col.10, lines 18-23; and col.11, lines 8-18);

allocating credits to ready network connections in the plurality of network connections in proportion to relative frequency values of ready network connections of a same virtual network connection merge (see Fig.3; col.11, lines 52-62; and col.12, lines 5-9), a ready network connection being a connection ready to send a data unit (see col.11, lines 41-44 and col.12, lines 19-20);

determining a chosen data unit to be transmitted to an output channel from the ready network connection in the ready network connections (see col.9, line 62-col.10, line 1), wherein the step of determining the chosen data unit depends on credit of the ready network connection (implicit: see col.8, lines 32-34); and

transmitting the chosen data unit to the output channel (see col.8, lines 21-23).

As per **claim 11**, Bonomi teaches of an integrated circuit configured to perform a virtual network connection merge, the integrated circuit comprising:

controller circuitry configured to control operations (see Fig.4) of:

assembling at least one data unit from data traffic of a ready network connection in a plurality of network connections (see Fig.3; col.11, lines 20-32 & 41-44; and col.12, lines 19-20);

assigning a relative frequency value to ready network connections, wherein a higher relative frequency value is assigned to a network connection requiring a higher relative bandwidth (see col.2, lines 34-44; col.10, lines 18-23; and col.11, lines 8-18);

allocating credits to each network connection in proportion to relative frequency values of ready network connections of a same virtual network connection merge (see Fig.3; col.11, lines 52-62; and col.12, lines 5-9), a ready network connection being a connection ready to send a data unit (see col.11, lines 41-44 and col.12, lines 19-20);

determining a chosen data unit to be transmitted to an output channel from the ready network connection in the ready network connections (see col.9, line 62-col.10, line 1), wherein the step of determining the chosen data unit depends on credit of the ready network connection (implicit: see col.8, lines 32-34); and

transmitting the chosen data unit to the output channel (see col.8, lines 21-23).

As per **claim 21**, Bonomi teaches a computer-readable medium carrying one or more sequences of one or more instructions for performing a virtual network connection merge, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

assembling at least one data unit from data traffic of a ready network connection in a plurality of network connections (see Fig.3; col.11, lines 20-32 & 41-44; and col.12, lines 19-20);

assigning a relative frequency value to each network connection, wherein a higher relative frequency value is assigned to a network connection requiring a higher relative bandwidth (see col.2, lines 34-44; col.10, lines 18-23; and col.11, lines 8-18);

allocating credits to ready network connections in proportion to relative frequency values of ready network connections of a same virtual network connection merge (see Fig.3; col.11, lines 52-62; and col.12, lines 5-9), a ready network connection being a connection ready to send a data unit (see col.11, lines 41-44 and col.12, lines 19-20);

determining a chosen data unit to be transmitted to an output channel from the ready network connection in the ready network connections (see col.9, line 62-col.10, line 1), wherein the step of determining the chosen data unit depends on credit of the ready network connection (implicit: see col.8, lines 32-34); and

transmitting the chosen data unit to the output channel (see col.8, lines 21-23).

As per **claim 31**, Bonomi teaches a method of performing a virtual network connection merge, the method comprising:

assigning a relative frequency value to each network connection in a plurality of network connections being represented in a first list (see col.2, lines 34-44; col.10, lines 18-23; and col.11, lines 8-18);

assigning a credit to each ready network connection in the plurality of network connections in the first list in a round robin sequential fashion (see col.12, lines 33-35

Art Unit: 2155

and col.13, lines 1-11), a ready network connection being a connection ready to send a data unit (see col.11, lines 41-44 and col.12, lines 19-20);

when a ready network connection is assigned credits *substantially* equal to its relative frequency value (see Fig.3; col.11, lines 52-62; and col.12, lines 5-9), removing the ready network connection from the first list (see col.10, lines 26-31 and col.11, lines 28-32);

continuing to assign a credit to each ready network connection in the plurality of network connections in the first list in a round robin sequential fashion until the first list is empty, wherein when a network connection is assigned credits *substantially* equal to its relative frequency value, removing the ready network connection from the first list (repeating previous steps does not make invention novel: see previously cited reference locations);

determining a chosen data unit to be transmitted to an output channel from a ready network connection in the ready network connections (see col.9, line 62-col.10, line 1), wherein the step of determining the chosen data unit depends on credit of the ready network connection (implicit: see col.8, lines 32-34); and

transmitting the chosen data unit to the output channel (see col.8, lines 21-23).

**DEPENDENT:**

As per **claims 2, 12, and 22**, Bonomi further teaches wherein the step of assembling at least one data unit comprises:



Art Unit: 2155

allocating the data traffic of the at least one data unit into memory cells (see col.4, lines 6-9); and

adding the memory cells to cell descriptor (CD) lists until an end of frame (EOF) cell is received, wherein the end of frame cell is used to identify unit boundaries (see abstract: "Sequence of cells forming a frame are buffered in the ATM switch until the end of frame cell is received").

As per **claims 3, 13, and 23**, Bonomi further teaches wherein the calculating step comprises calculating a higher credit for the ready network connection having data that is ready for transmission (see col.12, lines 66-67), wherein a ready data unit is a whole data unit with memory cells filled with data traffic (inherent).

As per **claims 4, 14, and 24**, Bonomi further teaches wherein the step of transmitting the chosen data unit comprises:

allocating merge bandwidth for the chosen data unit (see col.12, lines 33-37);

adding memory cells of the chosen data unit to transmit lists (see col.10, lines 26-31 and col.15, lines 52-54); and

transmitting the memory cells of the chosen data unit to the output channel based on information in the transmit lists (see col.10, lines 26-31 and col.15, lines 54-61), wherein the memory cells of the chosen data unit are transmitted until an end of frame cell of the chosen data unit is transmitted (see col.13, lines 1-4).

As per **claims 5, 15, and 25**, Bonomi teaches of further comprising: determining another chosen data unit to be transmitted the output channel (see col.13, lines 1-4);

and transmitting the other chosen data unit to the output channel (see col.13, lines 12-21).

As per **claims 6, 16, and 26**, Bonomi teaches of further comprising performing steps of the method until all data units with sufficient credit have been transmitted (inherent).

As per **claims 7, 17, and 27**, Bonomi further teaches wherein the ready network connection includes Asynchronous Transfer Mode (ATM) connections (see col.1, lines 16-20).

As per **claims 8, 18, and 28**, Bonomi teaches of further comprising:  
assigning a bandwidth guarantee to each network connection (see col.10, lines 7-9 and col.12, lines 7-18);  
receiving an overload traffic from a network connection having a relatively low bandwidth guarantee (implicit: see col.4, lines 6-15); and  
storing the overload of traffic into at least one stored data unit (see col.10, lines 34-36).

As per **claim 32**, Bonomi teaches of further comprising moving the ready network connection from the first list to a second list, wherein when the first list is empty, moving the ready network connections back to the first list (see col.10, lines 24-33), the method further comprising:

continuing to assign a credit to each ready network connection in the plurality of network connections in the first list in a round robin sequential fashion until the first list is empty, wherein when a ready network connection is assigned credits *substantially* equal

Art Unit: 2155

to its relative frequency value, removing the ready network connection from the first list (repeating previous steps does not make invention novel: see previously cited reference locations of claim 31).

As per **claims 33-35**, Bonomi further teaches wherein allocating credits to each network connection comprises:

assigning a credit to each ready network connection in the plurality of network connections in a list (see col.12, lines 5-9);

when a ready network connection is assigned credits equal to its relative frequency value, removing the ready network connection from the list (see col.10, lines 15-18); and

continuing to assign a credit to each ready network connections in the plurality of network connections in the first list until the list is empty, wherein when a ready network connection is assigned credits equal to its relative frequency value, the ready network connection is removed from the first list (repeating previous steps does not make invention novel: see previously cited reference locations).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2155

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10, 20, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonomi et al. (US 6,396,834 B1) in view of Radhakrishanan et al. (US 6,049,526 A).

As per **claims 10, 20, and 30**, Demizu does not explicitly teach wherein the determining step comprises: generating a particular bandwidth shape token for the virtual network connection merge; and receiving a bandwidth shape token configured to assist in identifying the chosen data unit. Radhakrishanan teach of generating a particular bandwidth shape token for the virtual network connection merge (see col.6, lines 39-41); and receiving a bandwidth shape token configured to assist in identifying the chosen data unit (see col.9, lines 45-60).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Radhakrishanan within the system of Demizu be implementing generating a particular bandwidth shape token and receiving such for assisting in identifying the chosen data unit within the method of performing virtual network connection merge by a program or integrated circuit because Radhakrishanan teaches that such an implementation is employed to guarantee scheduling of different VC (virtual channel) cells (of different rates) and also "avoids and/or reduces cell clumping buffer overflows".

***Response to Arguments***

8. The objection of claims 10, 20, and 30 in the previous office action filed September 14, 2005, has been withdrawn due to the amendment.

9. The applicant(s) request that the rejection of claims 31 and 32 under 35 UCS 112, 1<sup>st</sup> paragraph be withdrawn by directing the examiner to page 25 and page 28 for support.

However, after careful review there is neither explicit teaching nor suggestion of "round robin sequential fashion" in the recited pages. Particularly, on page 25, the specification discusses of "another round of bandwidth allocation", however this teaching is broader than the specific scheduling algorithm known as "round-robin". For this reason, the rejection of claims 31 and 32 under 35 USC 112, 1<sup>st</sup> paragraph is maintained.

10. The applicant(s) have requested that the Examiner point out the language in claim 31 and 32 is considered an Omnibus type claim.

The term "substantially" renders the claim as being indefinite and therefore, appropriate correction is required.

11. Applicant's arguments with respect to the previous cited prior art Demizu (US 6,195,355 B1) have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

12. For the reasons above claims 1-8, 10-18, 20-28, and 30-35 has been rejected and remain pending

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Y. Won whose telephone number is 571-272-3993. The examiner can normally be reached on M-Th: 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on 571-272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Won



February 2, 2006



SALEH NAJJAR  
SUPERVISORY PATENT EXAMINER